REMARKS

Item 5 of the Office Action dated May 28, 2003 characterizes that action as final, in violation of accepted Patent Office standards, MPEP 706.07(a) ("Under present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement filed during the period set forth in **37 CFR 1.97(c)** with the fee set forth in **37 CFR 1.17(p))**, and the finality of the current Office Action cannot be sustained.

All claim rejections in the current Office Action apply a new reference, not even among the prior art of record in the case before the current Office Action. The April 16, 2003 after-final amendment of claim 1 merely corrected the informality noted in item 1 of the January 28, 2003 Office Action. Nor does item 5 of the current Office Action even attempt to argue that this new ground for rejection was necessitated by the April 16 amendment of an informality. To the contrary, amendment was necessitated by the persuasiveness of the remarks in the April 16 amendment, as item 1 of the current Office Action acknowledges.

Reconsideration and withdrawal of the finality of the current rejection is respectfully requested, to avoid the need for the applicants to take further measures within the Patent Office.

The current Office Action has been reviewed and carefully considered. Claims 1-12 remain pending in this case, with claims 1 and 7 being the independent claims. Reconsideration of the above-identified application in view of the following remarks is respectfully requested.

Claims 1-12 were rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 5,625,780 to Hsieh et al. ("Hsieh") in view of U.S. Patent No. 6,285,548 to Hamlet et al. ("Hamlet").

The rejection is traversed at least on procedural grounds, since the Hamlet reference is not prior art.

Hamlet was filed on August 18, 2000. The earliest effective date for which Hamlet can be applied in rejection of a patent claim is its 102(e) date of August 18, 2000.

In contrast, the present application claims August 5, 2000 as its priority date based on a counterpart Korean application filed on that date. Since the Hamlet effective date of August 18, 2000 post-dates the effective filing date of August 5, 2000 of the instant application, Hamlet is not prior art as to the claims in the instant application.

The declaration filed on August 2, 2001 claimed the August 5, 2000 priority date. The declaration filing included a certified copy of the Korean application. In paper 4, "Office Action Summary," the August 8, 2002 Office Action acknowledged the claimed priority and receipt of the certified copy of the Korean application

Enclosed please find a certified translation of the Korean application.

It is believed that all requirements for establishing priority are met under 35 U.S.C. 119(b) based on the above-noted submissions. Accordingly, reconsideration and

withdrawal of the rejections of claims 1-12 is respectfully requested.

In view of the foregoing remarks, it is believed that this application is now in condition for allowance. The Examiner is invited to contact the undersigned in the event of any perceived outstanding issues so that passage of the case to issue can be effected without the need for a further Office Action.

In the event that any additional fee is required to continue the prosecution of this Application as requested, please charge such fee to Deposit Account No. 502-470.

Respectfully submitted,

CHA & REITER

By: Steve S. Cha
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Date: July 29, 2003

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Certificate of Mailing Under 37 CFR 1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to COMMISSIONER FOR PATENTS, ALEXANDRIA, VA 22313 on July 29, 2003.

Steve Cha, Reg. No. 44,069
(Name of Registered Rep.)

7/29/03
(Signature and Date)

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JUL 31 2003
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CERTIFICATE OF TRANSLATION

As a below named translator, I hereby declare that my residence and citizenship are as stated below next to my name and I hereby certify that I am conversant with both the English and Korean languages and the document enclosed herewith is a true English translation of the Priority Document with respect to the Korean patent application No. **2000-45478** filed on **August 5, 2000.**

NAME OF THE TRANSLATOR : Hyang-Suk KO

SIGNATURE : Hyangsuk Ko **Date** : July 23, 2003

RESIDENCE : MIHWA BLDG., 110-2, MYONGRYUN-DONG 4-GA, CHONGRO-GU, SEOUL 110-524, KOREA

CITIZENSHIP : REPUBLIC OF KOREA

OIPE JC102
JUL 31 2003
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Translation of Priority Document

THE KOREAN INTELLECTUAL PROPERTY OFFICE

This is to certify that annexed hereto is a true copy from the records of the Korean Industrial property Office of the following application as filed

Application Number	:	Patent Application No. 2000-45478
Date of Application	:	August 5, 2000
Applicant(s)	:	Samsung Electronics Co., Ltd.

June 8, 2001

COMMISSIONER

[ABSTRACT OF THE DISCLOSURE]

[ABSTRACT]

Disclosed an opto-electrical cross connect device of high density including a shelf having a plurality of guide rails at its inner portions; a switch motherboard disposed on the rear surface of the shelf; an electric crosspoint switch positioned on the front surface of the switch motherboard; a plurality of switch connectors positioned on the front surface of the switch motherboard; an optical transceiver board mounted in the guide rail of the shelf; and a transceiver connector disposed at the rear end of the optical transceiver board, for connecting to the switch connector of the switch motherboard.

[REPRESENTATIVE FIGURE]

FIG. 3

[TITLE OF THE INVENTION]

OPTO-ELECTRICAL CROSS CONNECT DEVICE OF HIGH DENSITY

[BRIEF DESCRIPTION OF THE DRAWINGS]

FIG. 1 is a schematic diagram illustrating a conventional opto-electrical cross connect device;

FIG. 2 is a perspective diagram illustrating an opto-electrical cross connect device in accordance with a preferred embodiment of the present invention;

FIG. 3 is a schematic side diagram illustrating a switch motherboard and an optical transceiver board of the opto-electrical cross connect device in accordance with the preferred embodiment of the present invention; and

FIG. 4 is a schematic front diagram illustrating the switch motherboard of the opto-electrical cross connect device in accordance with the preferred embodiment of the present invention.

[DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT]

[OBJECT OF THE INVENTION]

[RELATED FIELD AND PRIOR ART OF THE INVENTION]

The present invention relates to an optical communication system, and in particular to an opto-electrical cross connect device.

In an optical communication system, an opto-electrical cross connect device is disposed at an intermediate node connecting an upper node such as a central base station and a lower node such as a subscriber. The opto-electrical

cross connect device transmits and allocates channel signals, optimizes traffic, congestion and growth of an optical network, and improves survivability of the network.

FIG. 1 is a schematic diagram illustrating a conventional opto-electrical cross connect device. Referring to FIG. 1, the conventional opto-electrical cross connect device includes an N×N electric crosspoint switch 120 at its center portion, a switch board 110 having 2N radio frequency connectors 130 at its side portions, and 2N optical transceivers 140 connected by 2N signal cables 150 connected to the respective radio frequency connectors 130 of the switch board 110.

That is, the N×N electric crosspoint switch 120, the switch board 110 having 2N radio frequency connectors 130, and 2N optical transceivers 140 are connected through 2N signal cables 150. Accordingly, when a value of 'N' is increased, a number of the signal cables 150 is also increased. It is thus difficult to perform interconnections of the 2N signal cables 150. Moreover, a size of the switch board 110 is increased to position the 2N radio frequency connectors 130 at its side portions.

[SUBSTANTIAL MATTER OF THE INVENTION]

It is, therefore, an object of the present invention to provide an opto-electrical cross connect device of high density which can improve spatial efficiency, without requiring interconnection of signal cables.

It is another object of the present invention to provide an opto-electrical cross connect device of high density which can improve integration of optical

transceivers.

To achieve the above objects, there is provided an opto-electrical cross connect device of high density, including: a shelf having a plurality of guide rails at its inner portions; a switch motherboard disposed on the rear surface of the shelf; an electric crosspoint switch positioned on the front surface of the switch motherboard; a plurality of switch connectors positioned on the front surface of the switch motherboard; an optical transceiver board mounted in the guide rail of the shelf; and a transceiver connector disposed at the rear end of the optical transceiver board, for connecting to the switch connector of the switch motherboard.

[CONSTRUCTION AND OPERATION OF THE INVENTION]

An opto-electrical cross connect device of high density in accordance with a preferred embodiment of the present invention will now be described in detail with reference to the accompanying drawings. It is understood that the present invention should not be limited to this preferred embodiment but various changes and modifications can be made by one skilled in the art within the spirit and scope of the present invention.

FIG. 2 is a perspective diagram illustrating the opto-electrical cross connect device in accordance with the preferred embodiment of the present invention, FIG. 3 is a schematic side diagram illustrating a switch motherboard and an optical transceiver board of the opto-electrical cross connect device, and FIG. 4 is a schematic front diagram illustrating the switch motherboard of the

opto-electrical cross connect device.

Referring to FIGS. 2 to 4, the opto-electrical cross connect device 200 includes a shelf 210, a switch motherboard 220 and an optical transceiver board 250.

The shelf 210 where components of the opto-electrical cross connect device 200 are mounted forms a plurality of guide rails 212 in parallel at the upper and lower inside portions. The guide rails 212 guide the respective optical transceiver boards 250 to be vertically mounted in the shelf 210, and maintain a predetermined interval of the optical transceiver boards 250.

The switch motherboard 220 is disposed on the rear surface of the shelf 210. An electric crosspoint switch 230 is positioned at the front center portion of the switch motherboard 220. A plurality of switch connectors 240 are positioned at one and the other sides of the electric crosspoint switch 230. Here, the electric crosspoint switch 230 and the switch connectors 240 are connected through an impedance signal line 222 formed on the switch motherboard 220 in a pattern shape. The electric crosspoint switch 230 and the switch connectors 240 are efficiently aligned at the front center and side portions of the switch motherboard 220, to improve integration thereof (here, the surface of the switch motherboard where the electric crosspoint switch and the switch .connectors are formed is defined as the front surface, and the opposite surface is defined as the rear surface).

The optical transceiver board 250 is mounted in the guide rail 212 of the shelf 210. A transceiver connector 260 connecting to the switch connector 240 of the switch motherboard 220 is provided at the rear end of the optical transceiver

board 250. That is, the optical transceiver board 250 is not connected to the switch motherboard 220 through a special signal cable, but directly connected to the switch connector 240 of the switch motherboard 220 by the transceiver connector 260.

On the other hand, the signal outputted from the transceiver connector 260 of the optical transceiver board 250 is transmitted to the switch motherboard 220 through the switch connector 240, and then inputted to the electric crosspoint switch 230 through the impedance signal line 222.

[EFFECT OF THE INVENTION]

As discussed earlier, in accordance with the present invention, the switch motherboard and the optical transceiver board are connected through the connector, instead of using the signal cable, and thus a special interconnection is not required. In addition, the electric crosspoint switch and the switch connectors are positioned on the front surface of the switch motherboard disposed on the rear surface of the shelf, thus improving integration of the optical transceiver board.

[PATENT CLAIMS]

[CLAIM 1]

An opto-electrical cross connect device of high density, comprising:

a shelf having a plurality of guide rails at its inner portions;

a switch motherboard disposed on the rear surface of the shelf;

an electric crosspoint switch positioned on the front surface of the switch motherboard;

a plurality of switch connectors positioned on the front surface of the switch motherboard;

an optical transceiver board mounted in the guide rail of the shelf; and

a transceiver connector disposed at the rear end of the optical transceiver board, for connecting to the switch connector of the switch motherboard.

[CLAIM 2]

The device according to claim 1, wherein the electric crosspoint switch is aligned at the front center portion of the switch motherboard, and the switch connectors are aligned at both side portions of the electric crosspoint switch.

[CLAIM 3]

The device according to claim 1, wherein the electric crosspoint switch and the switch connectors are connected through an impedance signal line formed on the switch motherboard.

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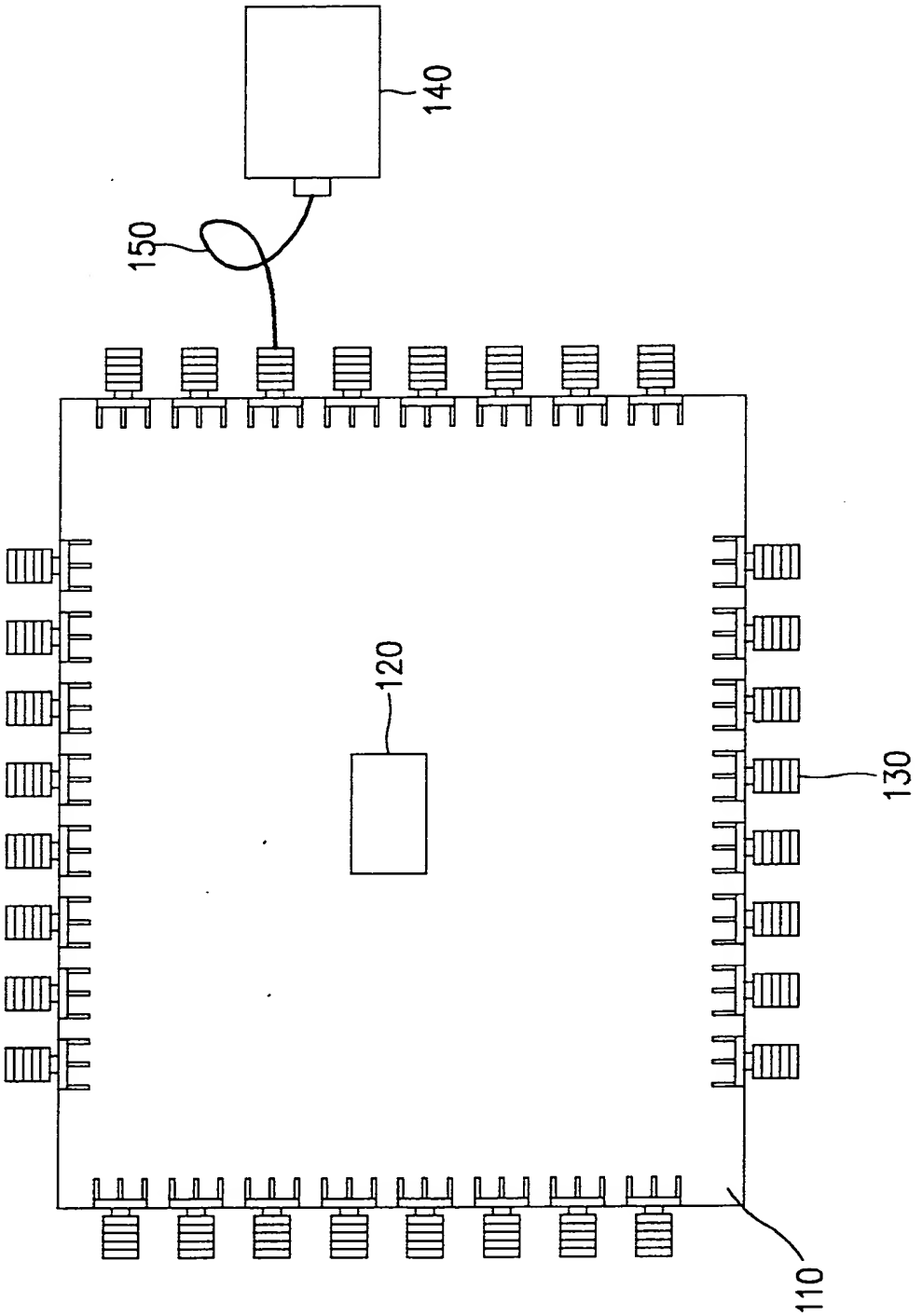

FIG. 1

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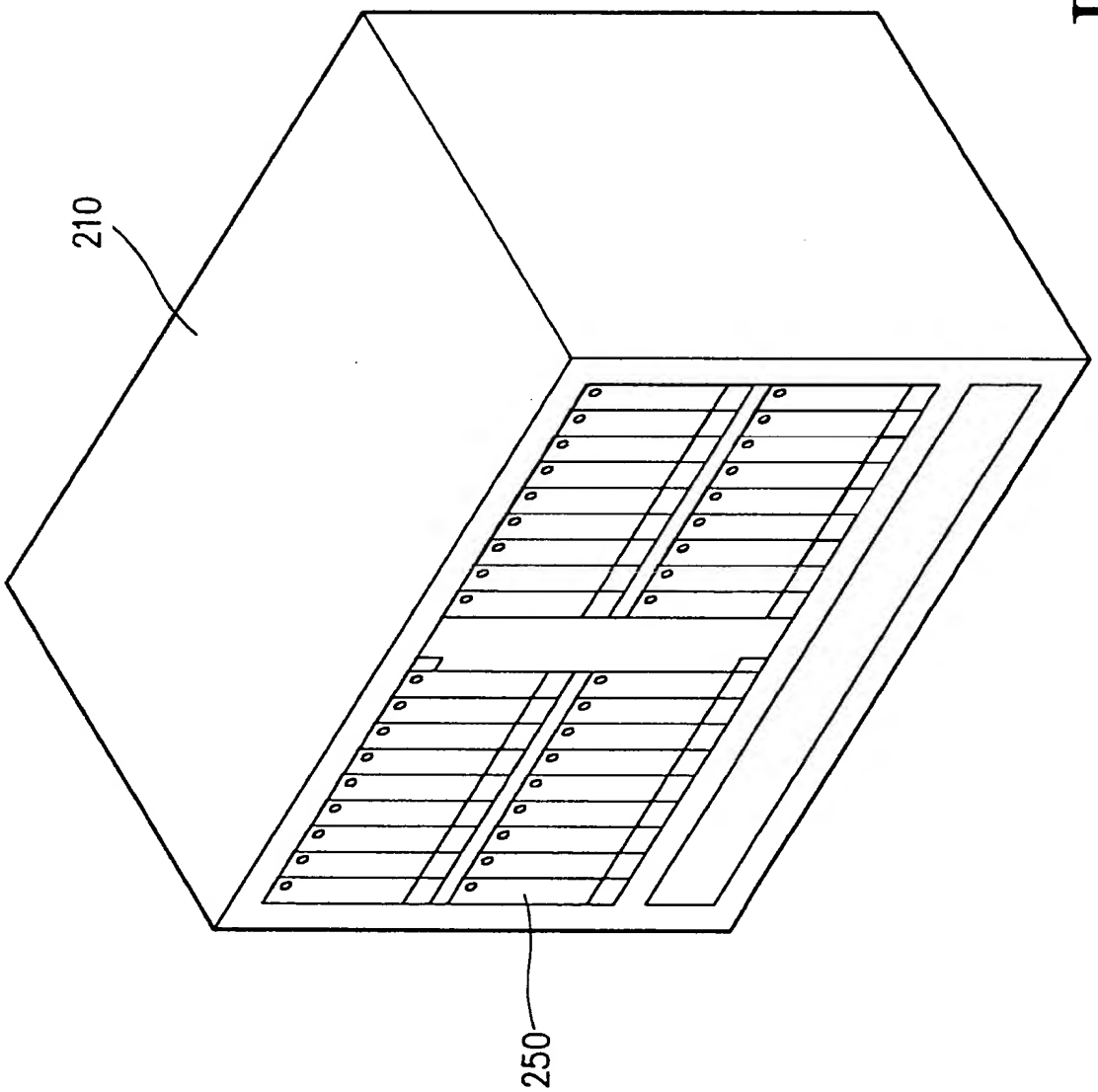
FIG. 2



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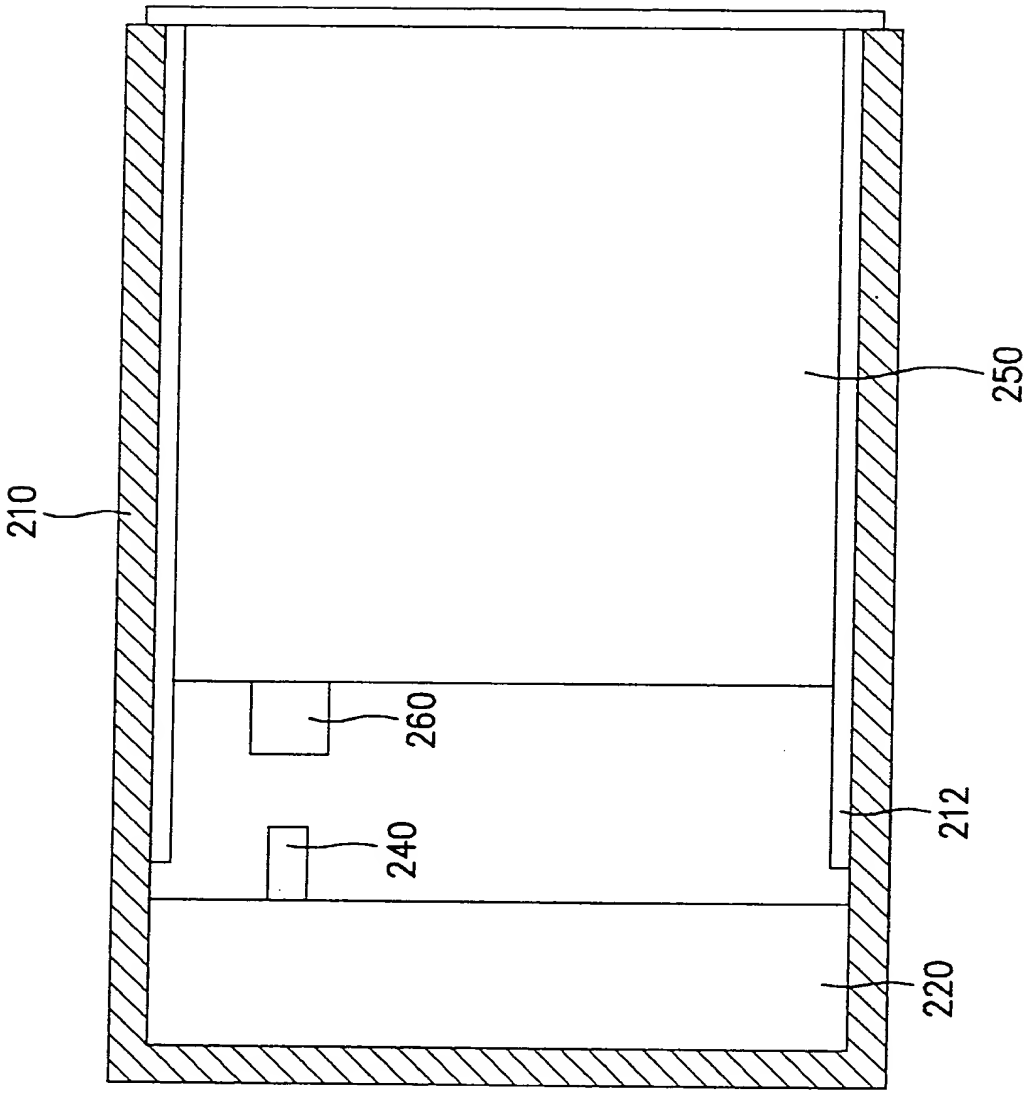

FIG. 3

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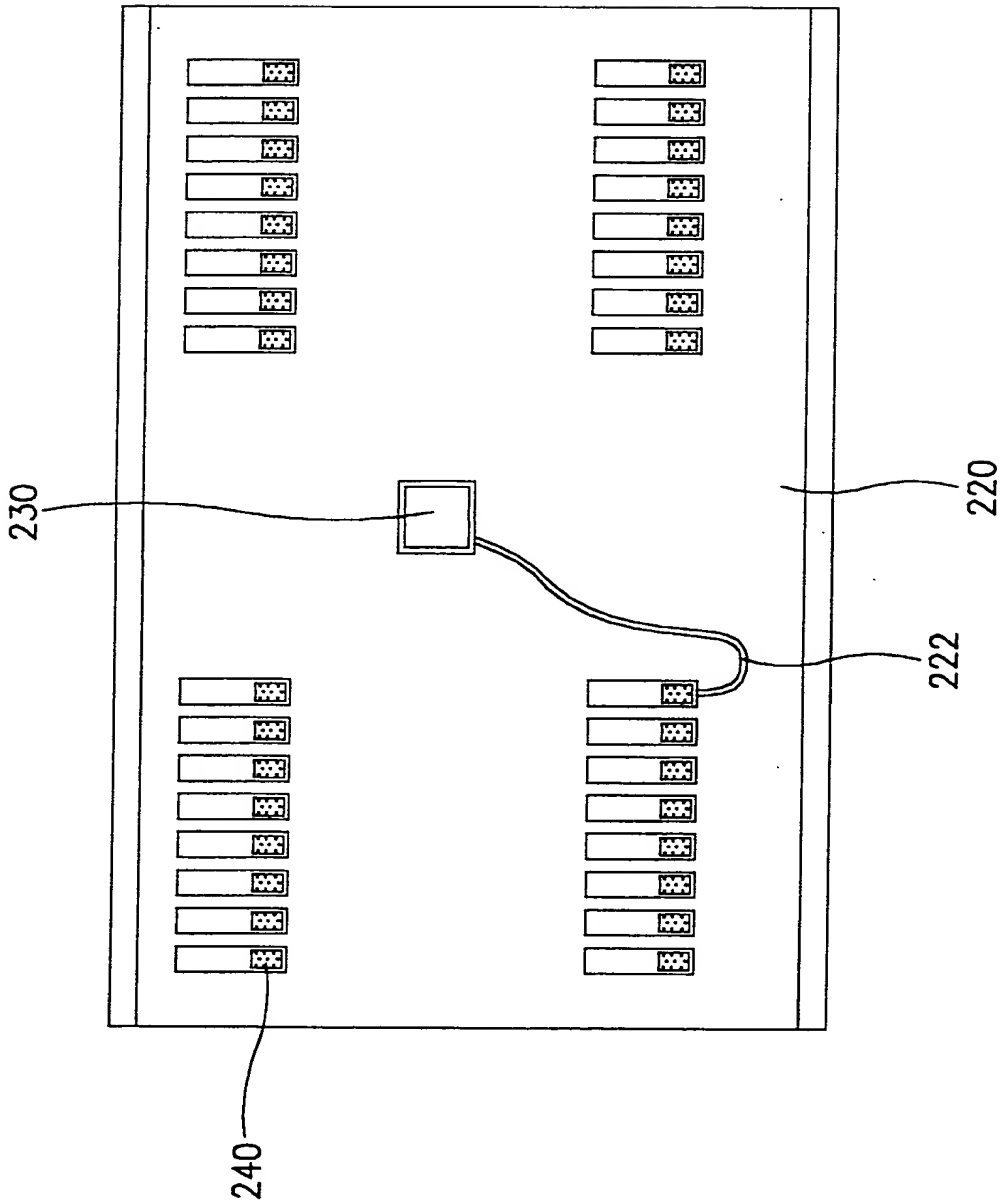

FIG. 4